BLACK ROT DISEASE DETECTION IN GRAPE PLANT USING COLOUR BASED SEGMENTATION & MECHINE LEARNING

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Roll NO : 06

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TABLE OF CONTENTS

1. Introduction
2. Modules
3. Data Flow Diagram
4. Table design
5. Developing Environment
6. Product backlog
7. User stories
8. Project Plan
9. Sprint Plans
10. Sprint Actual

BLACK ROT DISEASE PREDICTION

Black Rot is a fungal disease which affects the yield as well as the wine quality and can also cause complete crop loss. It can be identified as brown/tan coloured circular spots/lesions distributed unevenly on the leaf of the plant. A proper detection of the disease is required which can be further helpful in taking active measures like Spraying of Fungicides, Pruning, etc. can be done on time. The Plant Village Dataset is used, which contains images of grape plant leaves affected from Block Rot Disease as well as the pictures of healthy leaves. HSV and L*a*b* colour models are used for the segmentation purposes. The healthy part and the diseased part of the leaves are separated using color-based techniques and the features are stored for each leaf. The color of diseased part is very much different from the healthy part of the leaves which makes it easier to detect the disease on the basis of color. The machine learning is done using the Support Vector Machine Classifier and the results are analyzed on different Kernels of SVM.

MODULES

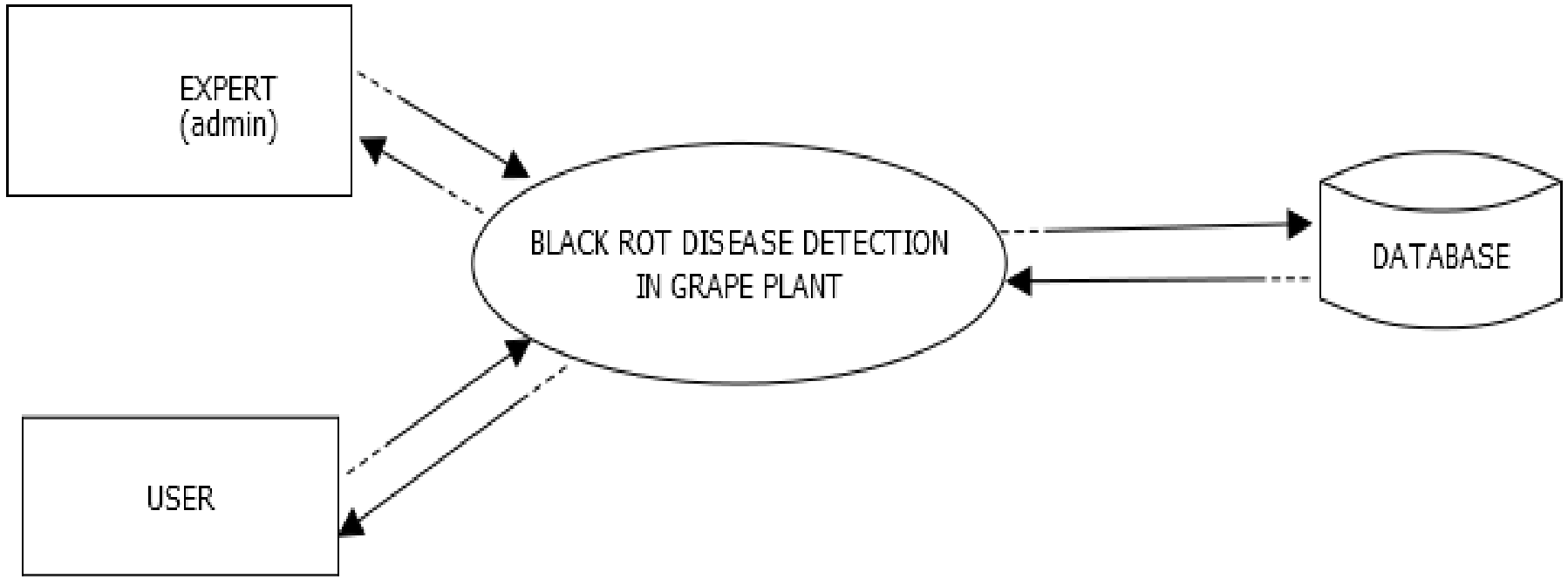
- Expert System
  - Login
  - Add and manage dataset
  - View farmers
  - Chat with farmers
  - Send notification
  - View feedback
  - Add fertilizer

❖ Farmers

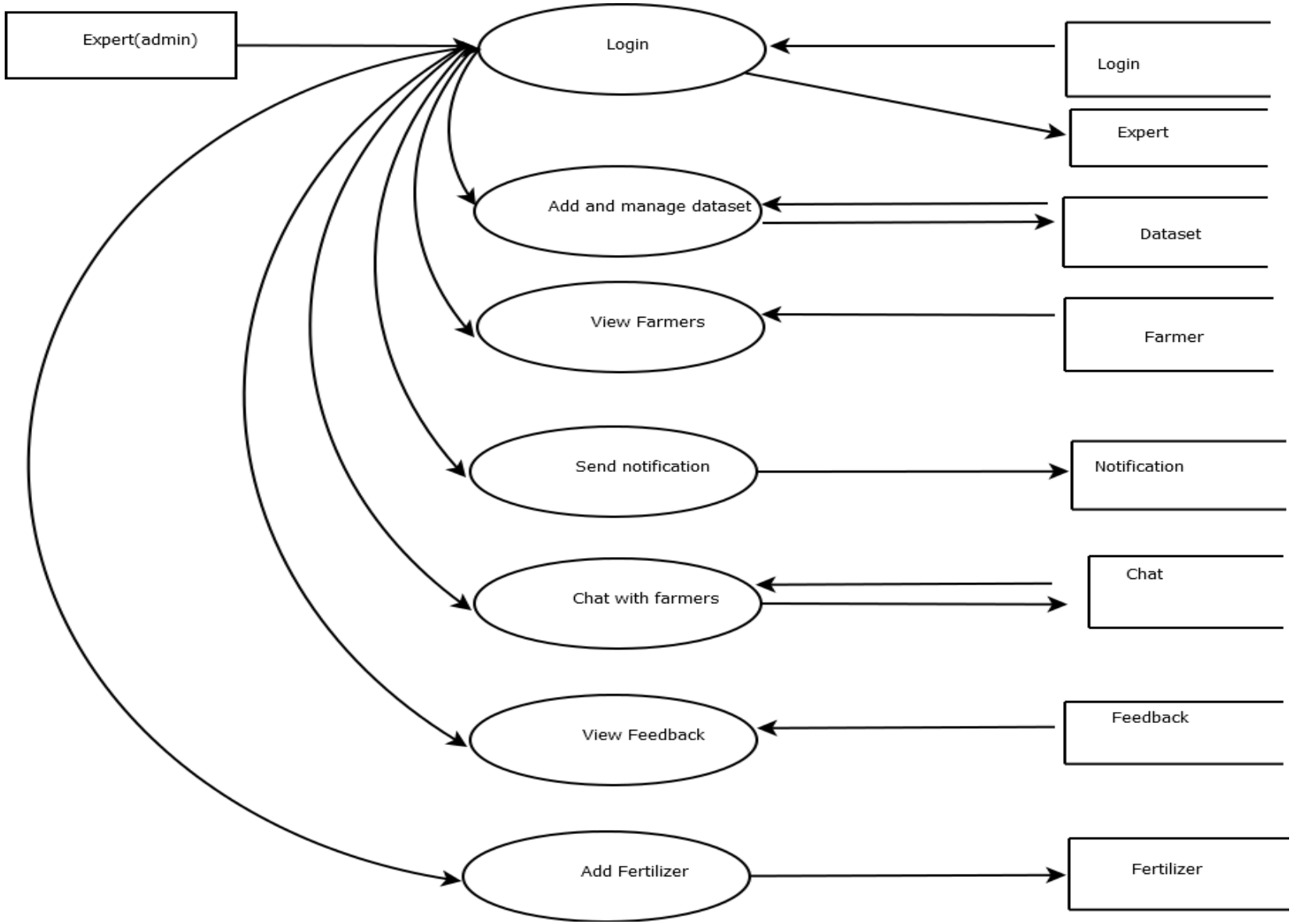
- Registration
- Login
- Upload leaf image & View prediction result
- Chat with experts
- View notifications
- Send feedbacks
- View fertilizer

DATA FLOW DIAGRAM

- LEVEL 0 :



- LEVEL 1 :


Expert(admin)
Login
Login
Expert
Add and manage dataset
Dataset
View Farmers
Farmer
Send notification
Notification
Chat with farmers
Chat
View Feedback
Feedback
Add Fertilizer
Fertilizer

- LEVEL 2 :

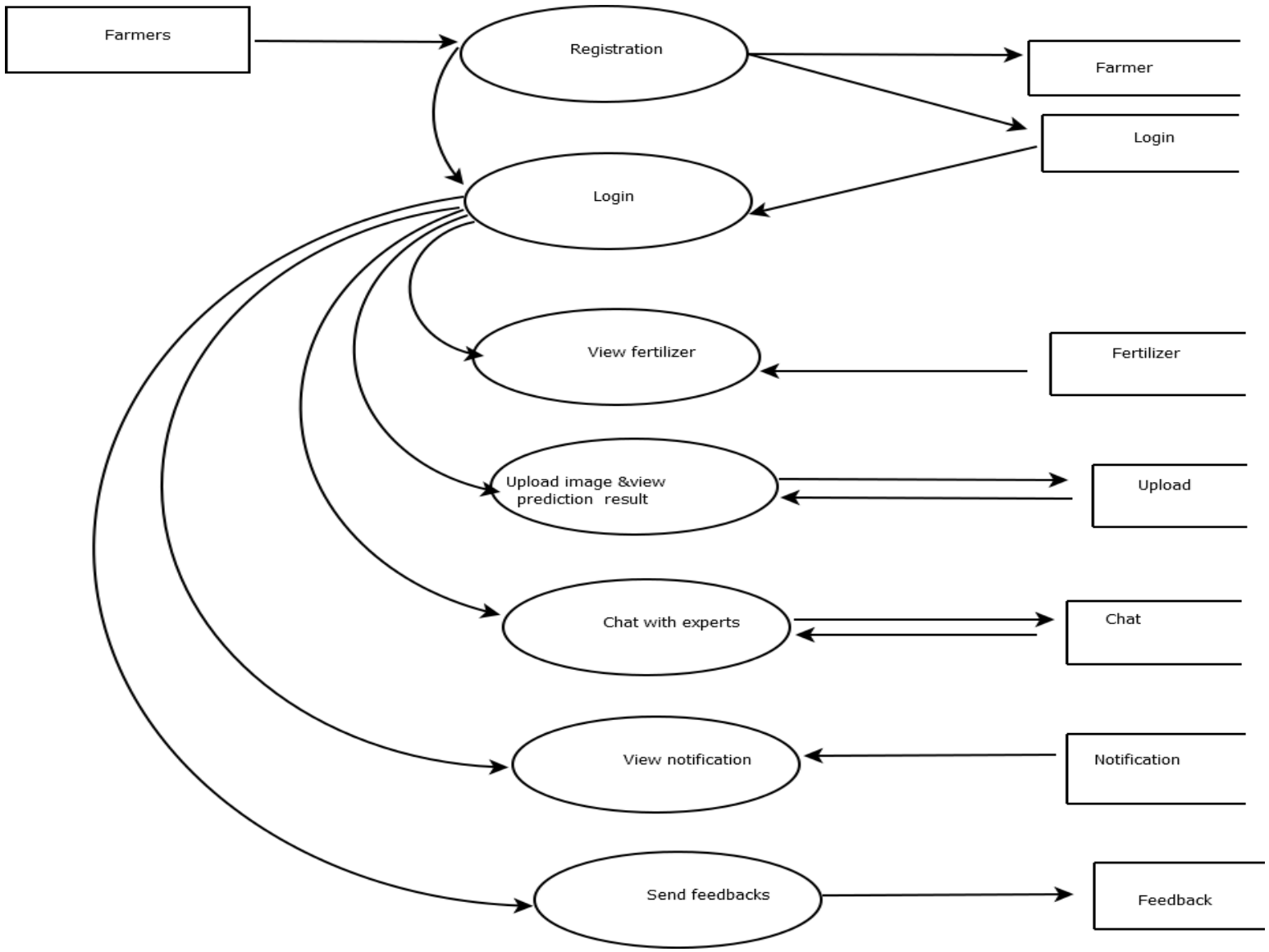

Farmers
Registration
Farmer
Login
Login
Login
View fertilizer
Fertilizer
Upload image &view prediction result
Upload
Chat with experts
Chat
View notification
Notification
Send feedbacks
Feedback

TABLE DESIGN

Login

1 Columns | 2 Indexes | 3 Foreign Keys | 4 Advanced | 5 SQL Preview

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	On Update	Comment
lid	int	11		☑	☑	☐	☑	☐	☐	
username	varchar	25		☐	☐	☐	☐	☐	☐	
password	varchar	25		☐	☐	☐	☐	☐	☐	
type	varchar	25		☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	

Notification

1 Columns | 2 Indexes | 3 Foreign Keys | 4 Advanced | 5 SQL Preview

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	On Update	Comment
nid	int	11		☑	☑	☐	☑	☐	☐	
notification	varchar	100		☐	☐	☐	☐	☐	☐	
date	date			☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	

Farmer

1 Columns | 2 Indexes | 3 Foreign Keys | 4 Advanced | 5 SQL Preview

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	On Update	Comment
fid	int	11		☑	☑	☐	☑	☐	☐	
lid	int	11		☐	☐	☐	☐	☐	☐	
fname	varchar	25		☐	☐	☐	☐	☐	☐	
lname	varchar	25		☐	☐	☐	☐	☐	☐	
phone	bigint	20		☐	☐	☐	☐	☐	☐	
place	varchar	25		☐	☐	☐	☐	☐	☐	
pin	int	11		☐	☐	☐	☐	☐	☐	
post	varchar	25		☐	☐	☐	☐	☐	☐	
email	varchar	50		☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	

DEVELOPING ENVIRONMENT

- OPERATING SYSTEM : WINDOWS 10
- FRONT END : HTML, CSS, JAVASCRIPT
- BACK END : MySQL
- Dataset: Plant Village Dataset
- IDE : JetBrains PyCharm, Android studio
- TECHNOLOGY USED : PYTHON,JAVA
- FRAME WORK USED : Flask

PRODUCT BACKLOG

User Story ID	Priority <High/Medium/Low>	Size (Hours)	Sprint <#>	Status <Planned/In progress/Completed>	Release Date	Release Goal
1	Medium	2	1	Completed	8/01/2022	Table design
2	High	3		Completed	8/01/2022	Form design
3	High	5		Completed	8/01/2022	Basic coding
4	High	5	2	Planned		collects the features of the disease
5	Medium	5		Planned		Training the data
6	High	5	3	Planned		classify different leaf images using SVM
7	Medium	5		Planned		find Black Rot disease
8	Medium	5	4	Planned		Testing data
9	High	5		Planned		Output generation

USER STORIES

UserStoryID	As a <type of user>	I want to	So that I can
1	Expert	login	login successful with correct username and password
2	Expert	Add & Manage Dataset	Add disease effected leaf Image to dataset, compare to uploaded image in here to predict disease
3	Expert	View farmer	View registered farmer details
4	Expert	Chat with farmers	Chat with farmers
5	Expert	Send notification	Send notification to user
6	Expert	View feedback	View user feedback
7	Expert	Add fertilizer	Add fertilizer details
8	User	Registration	User can register
9	User	Login	Login successful with correct username and password
10	User	Upload leaf image & view prediction result	Upload image and view result
11	User	Chat with expert	Chat with expert
12	User	View notification	View notification
13	User	Send feedback	Send feedback to expert
14	User	View fertilizer	View fertilizer

PROJECT PLAN

User Story ID	Task Name	Start Date	End Date	Days	Status
1	Sprint 1	26/12/2021	28/12/2021	2	Completed
2		29/12/2021	31/12/2021	3	Completed
3		03/12/2021	08/01/2022	5	Completed
4	Sprint 2	09/01/2022	16/01/2022	8	Planned
5		18/01/2022	22/01/2022	5	Planned
6	Sprint 3	23/01/2022	27/01/2022	5	Planned
7		30/01/2022	05/02/2022	7	Planned
8	Sprint 4	06/02/2022	10/01/2022	5	Planned
9		16/02/2022	19/02/2022	4	Planned

SPRINT BACKLOG PLAN

Backlog item	Status and completion date	Original estimate in hours	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13	Day14
User story#1,#2,#3			hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs
Table design	28/12/2021	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Form design	31/12/2021	3	0		1	1	1	0	0	0	0	0	0	0	0	0
Basic coding	08/01/2022	5	0	0	0	0	0	1	1	1	1	1	0	0	0	0
User story #4,#5																
collects the features of the disease	16/01/2022	5	1	1	0	1	1	1	0	0	0	0	0	0	0	0
Training the data	22/01/2022	5	0	0	0	0	0	0	0	1	1	0	1	1	1	0
User story #6,#7																
classify different leaf images using SVM	27/01/2022	5	1	1	1	0	1	1	0	0	0	0	0	0	0	0
find Black Rot disease	05/02/2022	5	0	0	0	0	0	0	0	1	1	1	1	1	0	0
User story #8,#9																
Testing data	10/02/2022	5	1	1	1	1	1	0	0	0	0	0	0	0	0	0
Output generation	19/02/2022	5	0	0	0	0	0	0	2	2	2	0	0	0	0	0
Total		40	4	4	3	3	4	3	3	5	4	2	2	2	1	0

SPRINT ACTUAL

Backlog item	Status and completion date	Original estimate in hours	Day1	Day2	Day3	Day4	Day5	Day6	Day7	Day8	Day9	Day10	Day11	Day12	Day13	Day14
User story#1,#2,#3			hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs	hrs
Table design	28/12/2021	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Form design	31/12/2021	3	0	0	2	1	0	0	0	0	0	0	0	0	0	0
Basic coding	08/01/2022	5	0	0	0	0	0	1	1	1	2	0	0	0	0	0
User story #4,#5																
collects the features of the disease																
Training the data																
User story #6,#7																
classify different leaf images using SVM																
find Black Rot disease																
User story #8,#9																
Testing data																
Output generation																
Total		10	1	1	2	1	0	1	1	1	2	0	0	0	0	0

THANK YOU